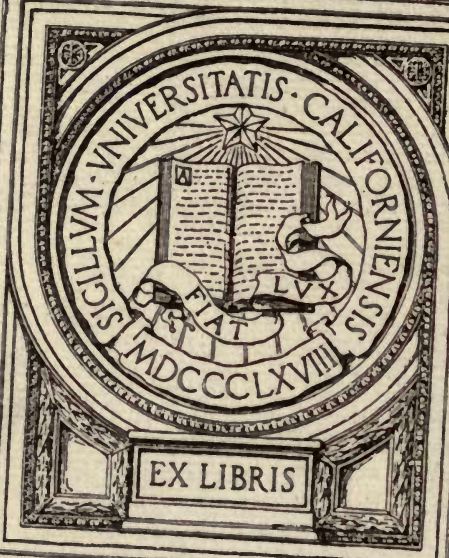

Report of Department of Commerce and Labor, Bureau of Standards, Washington, D. C.

CONDITIONS IN CERTAIN CITIES OF THE STATE OF CALIFORNIA

RELATIVE TO

WEIGHTS AND MEASURES

Printed Under Senate Resolution (Senator Richard J. Welch), Special Session 1911.

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LETTER OF TRANSMITTAL.

DEPARTMENT OF COMMERCE AND LABOR, BUREAU OF STANDARDS,
WASHINGTON, February 28, 1911.

HON. RICHARD J. WELCH, *State Senator, Sacramento, California.*

DEAR SIR: Referring to your letter of the 19th ultimo, requesting a copy of the report of the investigation made by this Bureau into the weights and measures conditions in certain cities in your State, I have the honor to enclose herewith copies of the reports on the following named cities: Sacramento, San Francisco, San Jose, Los Angeles, Oakland, Stockton, and Fresno.

We hope that these reports will be of value to you in obtaining adequate laws, and in bringing about better weights and measures conditions throughout your State.

We regret that we were unable to get these reports to you earlier; but we have only a limited force engaged on this work, and there has been a large amount of extra work during the past few weeks in connection with the sixth annual conference of the sealers of weights and measures of the various states.

There has been forwarded to you under separate cover a copy of the report of the fifth annual conference.

Very respectfully,

S. W. STRATTON, Director.

NATIONAL INVESTIGATION RELATING TO WEIGHTS AND MEASURES.

REPORT ON AN INVESTIGATION OF THE WEIGHTS AND MEASURES CONDITIONS FOUND IN SAN FRANCISCO, CALIFORNIA, BY THE BUREAU OF STANDARDS, IN JANUARY, 1911.

The city of San Francisco, California, has no local ordinance on the subject of weights and measures, except one ordinance in relation to the sale of butter in "print" form, no inspection of the weights and measures in commercial use, and no city standards by means of which the accuracy of those in use might be determined. In the absence of state laws on the subject, the city is, therefore, totally unprotected in this important matter.

An investigation has been made throughout the stores of the city in order to determine the accuracy of the apparatus in use, the method of sale of commodities, and the amounts delivered to the consumer by the merchants of the city. Representative stores were visited in every principal retail district, in order that the results might be as nearly general as possible.

The results show that the existing conditions are very chaotic. Faulty apparatus is being very commonly used, with the result that very much short weight is being delivered and enormous sums are being lost by the consumers of the city; and the honest, legitimate merchant is being constantly subjected to unfair and dishonest competition, and is occasionally giving overweight on account of the faulty construction of the scales in use.

The condition of the apparatus in use which was tested will first be detailed, after which the scale of special commodities and other matters of interest will be considered.

The scale table follows:

SCALE TABLE.

Type.	Total number tested.	Correct within 3 per cent.		Incorrect.		Fast—Minus. Slow—Plus.				Otherwise faulty.
		Number.	Per cent.	Number.	Per cent.	3-6 per cent.	6-9 per cent.	9-12 per cent.	Over 12 per cent	
Beam	17	7	41	10	59	— 2; +1	— 2; +1		— 1*	3
Computing	67	31	46	36	54	— 13; +5	— 5	— 1; +1	— 4†	7
Spring	51	8	16	43	84	— 15; +4	— 6	— 5; +1	— 5;‡ +1§	6
Totals	135	46	34.1	89	65.9	— 30 + 10	— 13 + 1	— 6 + 2	— 10 + 1	16

* This scale was short by 62 per cent.
† Three of these scales were — 16 per cent, — 14 per cent, and — 25 per cent.
‡ These scales ranged from 12 per cent to 31 per cent short.
§ This scale was 35 per cent over.
"Otherwise faulty" scales are those showing errors of plus-minus ½ oz. or more at any point from 8 oz. to 3 lbs., inclusive; plus-minus 1 oz. from 3 lbs. to 10 lbs., inclusive; plus-minus 2 ozs. above 10 lbs.: or scales which, on account of faulty construction or their condition are liable to show these errors.

It will be seen from the above tabulation that only 34 per cent of the scales in use are correct, the remaining 66 per cent delivering inaccurate amounts of commodity. As usual, the percentage of the apparatus giving overweight is small and the percentage of short weight correspondingly high. Here five scales out of every six listed in the percentage column are delivering less than the amount represented, and in addition, nearly all of the scales giving overweight have an error of less than 6 per cent. Very many of the scales are very seriously inaccurate, as is shown by the percentage columns. Thus, 15 per cent of those listed in these columns have a greater error than 12 per cent, the discrepancies varying from 12.5 to 62 per cent. It may be said that every scale in this column is delivering less than the quantity represented. It will be seen that one scale is listed as "slow," but the proprietor declared in this case that "an overweight error of about a half pound was allowed for." The error being somewhat less than this, short weight was the result. Twenty-six per cent of the scales specifically listed have an error of more than 9 per cent; while 45 per cent are more than 6 per cent incorrect.

Some of these errors are probably due to carelessness and ignorance, and others to faulty construction of apparatus. The great preponderance of the "fast" scales, as compared with those giving overweight, however, we believe, strongly indicate fraudulent alteration; and this is corroborated by evidence gleaned from the specific record cards. It is here shown that a number of stores have practically all the scales in use set so that short weight is delivered. Specific instances are: a store in which the only scale in use delivers shortages of from 12 to 18 per cent; in another the two scales were short from 4.5 to 18 per cent; in another both scales had metal, etc., attached to the pan so that shortages of from 3 to 8 per cent resulted; in still another each of the three scales delivered from 3 to 25 per cent less than the indicated amounts; again, each of the three scales in use had errors of —9, —12, and —24 per cent; and in still another store two expensive scales were set 14 per cent and 16 per cent short. And such a list could be greatly prolonged.

We believe that such records sufficiently indicate fraud. Attempts to alter scales or even to secrete them and thus prevent their inspection furnished positive evidence to the same effect.

We believe that the above conditions will at once show the extent of the short weight delivered and the consequent imperative need of an inspection department working under laws that grant to the officials sufficient powers to make the above conditions impossible. And we also believe that, until such laws are enacted and an inspection service established, short weight will continue to be the rule, as it has been in the past.

As is usual in this section, little tampering with the weights in use on beam scales was discovered. The number of weights tested is comparatively small on account of the very large number of weightless automatic weighing devices in use, but the weights examined have a much higher percentage of accuracy than the scales. The inaccuracies discovered were, we believe, largely the result of ordinary wear and tear not counteracted by frequent inspection and correction.

No dry measures were being used in the sale of dry commodities, the method usually resorted to being to sell such commodities by weight. The amounts of such commodities delivered may be determined by the condition of the scales in use previously shown. The rule is very commonly neglected in the sale of cranberries, however, the liquid measure being illegally used in this case. Since this measure is 15 per cent short of the dry standard by which such a commodity should be sold when any measure is used, shortages of about this amount result on all sales so made. At other times dry vegetables and sometimes groceries as well were sold by guesswork and in every such case a discrepancy is practically sure to result. The disuse of the dry measure seems to have resulted to some extent in the elimination of the liquid measure also. In cases where these were not used, the merchant filled the container brought by the customer and charged for the amount that this container is supposed to hold. It is a notorious fact that bottles, cans, etc., are usually short of their supposed capacity, often as much as 20 per cent and sometimes even more. When no measures were used, however, it did not appear that the merchant either reduced the charge or even represented to the consumer that the full amount could not be delievered. Thus large shortages on these amounts necessarily resulted, and many of the evils of "original package goods" sale become customary in the delivery of bulk goods also.

The elimination of the dry measure is commendable when the more satisfactory method of weighing these commodities takes its place. But the elimination of the liquid measure when the basis of sale becomes largely guesswork can not be so regarded, and liquid commodities should certainly be sold by some definite standard of measurement.

The weight of the prints or "squares" of butter sold as half pounds, pounds and two pounds becomes here a matter of the greatest importance on account of the very large quantity consumed in a city of this size, the expensive nature of the commodity, and the fact that practically all of the butter retailed to the consumer of the city is in this form.

In the investigation of this matter 302 "squares" of about twenty-five different brands were weighed. The data thus obtained is presented in the following table:

BUTTER TABLE.

Brand.	Size.	Number.			Average.	Errors—Average.	
		Total.	Full weight.	Light weight.		Ounces.	Per cent.
Isleton Creamery	1-lb.	29		29	14.86	— 1.14	— 7.1
Modesto	1-lb.	5	1	4	15.73	— .27	— 1.7
Alphine	1-lb.	4	3	1	15.98	— .02	
Sonoma Creamery	1-lb.	7		7	14.98	— 1.02	— 6.4
Bodego	1-lb.	9		9	15.39	— .61	— 3.8
Red Clover	1-lb.	10	1	9	15.39	— .61	— 3.8
Cal Falfa	1-lb.	7		7	15.4	— .60	— 3.7
Lily	1-lb.	8		8	15.26	— .74	— 4.6
Golden Eagle	1-lb.	4	3	1	15.85	— .15	— 1.
Blue Ribbon	1-lb.	1		1	15.75	— .25	— 1.8
Totals		84	8	76			
Per cent of prints short							90
Average weight of prints						15.12	
Average shortage of prints						.88	— 5.5
Alphine	1½-lb.	4		4	22.58	— 1.42	— 6.
Sherritas	1½-lb.	6	1	5	23.32	— .68	— 2.8
Woodlawn*	1½-lb.	8	3	5	23.79	— .21	— .9
Modesto	1½-lb.	5	4	1	23.34	— .66	— 2.8
California Rose	1½-lb.	4	3	1	23.96	— .04	
Golden Glow	1½-lb.	2	1	1	23.91	— .09	
Lorsbach & Co.	1½-lb.	2	1	1	23.63	— .37	— 1.5
Jersey	1½-lb.	2		2	23.70	— .30	— 1.3
Bodego	1½-lb.	7	2	5	23.67	— .33	— 1.4
Totals		40	15	25			
Per cent of prints short							62.5
Average weight of prints						23.53	
Average shortage of prints						— .47	— 2.
Isleton Creamery	2-lb.	28		28	29.72	— 2.28	— 7.1
Modesto	2-lb.	22		22	31.19	— .81	— 2.5
Alphine	2-lb.	13	1	12	31.02	— .98	— 3.1
Woodlawn	2-lb.	10		10	30.63	— 1.37	— 4.3
Bohemian	2-lb.	9	1	8	31.0	— 1.	— 3.1
Sherritas	2-lb.	9		9	30.87	— 1.13	— 3.5
Jersey	2-lb.	10	4	6	30.84	— .16	— .5
Lily	2-lb.	9	3	6	30.99	— 1.01	— 3.2
Pansy	2-lb.	3		3	29.65	— 2.35	— 7.2
Turlock	2-lb.	7		7	29.87	— 2.13	— 6.7
Red Clover	2-lb.	6		6	29.70	— 2.3	— 7.2
Fallon	2-lb.	7	5	2	31.87	— .13	— .4
Maceati & Battertessa's	2-lb.	6		6	30.37	— 1.63	— 5.1
California Rose	2-lb.	5	3	2	31.97	— .03	
Golden Glow	2-lb.	4		4	31.19	— .81	— 2.5
Sonoma	2-lb.	4		4	30.6	— 1.40	— 4.4
Star	2-lb.	3		3	30.16	— 2.84	— 8.9
Cloverbrook	2-lb.	3		3	30.65	— 1.35	— 4.2
Golden Garland	2-lb.	4		4	31.12	— .88	— 2.8
Evergreen	2-lb.	2	1	1	31.59	— .41	— 1.5
Totals		164	18	146			
Per cent of prints short							89
Average weight of prints						30.72	
Average shortage of prints						1.28	— 4.
Sonoma†	½-lb.	8		8	6.3	— 1.7	—21.2
Sonoma†	¼-lb.	6		6	3.3	— .7	—17.5

*Marked 1⅓ lbs. full wt.

†It was stated by the proprietor of store that these weighed about ⅓ and ¼ lbs. They are, therefore, so listed.

The 2-pound, 1-pound and 1½-pound squares are of relative importance to the trade in the order mentioned. Therefore the total number of each weighed are in the same ratio. An endeavor has been made to gain as accurate an average as is possible. It will be noted that a greater number of certain brands have been weighed. This has been

done because the brands in question were more commonly encountered. The results are, we believe, a very fair average of the weight of butter delivered to the people of the city, as a whole.

It will be noted that the general average weight of the "pound" prints is 15.12 ounces, the shortage being .88 ounce, or 5.5 per cent per print; the 2-pound prints average 30.72 ounces, the shortage being 1.28 ounces, or 4 per cent per print; the 1½-pound prints average 23.53 ounces, the shortage in this case being .47 ounce, or 2 per cent per print. In one store the proprietor was "printing" his own butter in small bricks and declared that these weighed about "half-pounds" and "quarter-pounds." On account of this statement and since the price charged seemed to be based on this assumption they have been so tabulated. The "half-pounds" average in weight 6.3 ounces, a shortage of 1.7 ounces, or 21 per cent; and the "quarter-pounds" average 3.3 ounces, a shortage of .7 ounce, or 17.5 per cent per print. Of the total of 302 squares weighed, 41 were full weight, while the remaining 261 were short. Thus, only 13 per cent of the total deliveries of this commodity contain the represented amount.

It is not noted that the price of this commodity is lower on account of the shortage, and butter moreover which is practically full weight seems to be priced the same as that which is short. Thus, the full shortage is an absolute financial loss to the consumers of the city.

An analysis of the various brands shows that four of the ten brands of the "one-pound" size are within 2 per cent of the correct weight, while two brands are respectively 6.4 per cent and 7.1 per cent light. Four of the nine brands of the "1½-pound" size are within 2 per cent, while one brand is 6 per cent light. And three of the twenty brands of the "2-pound" size are within 2 per cent, while three are more than 7 per cent light. Thus not only does the greater part of the loss fall upon the purchasers of certain brands, but full-weight brands must compete with brands which are very short in weight and grave injustice is being done the honest manufacturer of the former brands on this account. And thus a premium is put upon dishonesty rather than upon honesty in this case.

Some of the merchants endeavor to keep within the law by selling butter by the "print." But it has been repeatedly shown in the past that this can not be successfully done since butter has always been retailed by the pound. The great majority of the merchants make no pretense of selling in any other way.

Only one manufacturer was found billing a smaller weight than is understood, this firm billing "30-ounce prints." The result to the consumer is the same, however, since these will be tacitly retailed as "2-pounds." Another manufacturer, using a very heavy carton, billed "gr. wt." but this averages short even gross, and these also reached the consumer as pounds and two-pounds. The merchant handling this butter always stipulated "full weight" in ordering and had never seen the words "gr. wt." on the bill. He called up the company on the telephone while the Bureau of Standards' inspector was in the store and was told by the representative of the company that all their butter was "full weight." And finally the great majority of the manufacturers bill their product by the pound. One brand 7.1 per cent short on both the pound and two pound sizes is always billed in this way.

The loss to the consumers of the city is of course enormous. The Bureau of Labor Statistics show that the normal adult of the working man's family uses about 28 pounds of butter a year. Basing a total consumption upon 400,000 people, the total amounts to 11,200,000 pounds a year. The average shortage per pound amounts to .68 ounces or 475,000 pounds per year. At an average price of 35 cents per pound, which is much less than the present price, the loss on this one commodity alone to the people of San Francisco is more than $160,000 per year.

The above conditions exist in spite of the fact that on November 21, 1910, the board of supervisors passed an ordinance specifically regulating trade in this commodity. A copy of this ordinance is attached. It will be seen that "the selling of butter in prints or packages, or otherwise, other than by or in terms of pounds and ounces, avoirdupois, or for a greater weight than the true net weight thereof" is made guilty of a crime with a specified fine. Although this ordinance has been in force for about two months, the results of the inspection detailed above show that every feature is being continually violated both by the manufacturer or commission merchant and the retailer. This serves to illustrate that an ordinance of this kind is useless unless some department or official is delegated to enforce the same, and proves, we believe, the necessity for regular inspection before the existing conditions can be alleviated.

The use of the majority of the faulty scales could not be checked by packages weighed upon them since the majority of merchants weigh packages only when they are ordered. In one store, however, a large number of orders about to be delivered were intercepted and checked.

Twenty-four individual packages were weighed up and twenty-one found to be short by amounts varying from .8 per cent to 19 per cent, the average shortage on every package, both heavy and light packages being included, was 5.8 per cent. In each of the three cases in which packages were overweight, the commodity was a cheap one, and careful weighing had not been done. Included in the short packages were tea, coffee, spices, cooked ham, etc., and other high-priced commodities. A test of the scales in this store showed the following: One scale — 6 per cent to — 12 per cent; one O. K.; one — 4.5 per cent, and one "otherwise faulty." It will be seen that only one scale equals the average error in deficiency. The proprietor admitted that a number of the short packages were weighed on the correct scale and this indicates that short weight in the city is not even limited to the errors of the scales, but that short packages are delivered from some scales which are in themselves correct. Some of the short packages, however, had been weighed on the scale most seriously incorrect, which was the most commonly used.

It has been shown by quotation from specific record cards that the scales in many stores are much more seriously incorrect than those in use here; and the errors on packages delivered from these scales may be best imagined by the data here obtained. All the packages weighed in this store, as well as those weighed elsewhere, are tabulated in the following table.

One other case is worthy of special note. One of the larger stores of the city puts up rice in 25-cent cartons. These cartons are labeled "2½ lbs." and the contents are sold for that amount. The proprietor ad-

mitted that these cartons were filled and sold without weighing. Ten of these, ready for delivery, were weighed. Every one was light by an amount varying from — 3 per cent, the heaviest, to — 10.5 per cent, the lightest carton. A test indicated that these cartons when completely filled and settled would still fall short of holding the amount stamped upon them. Yet the proprietor declares that they were made in accordance with the specifications of a large local box-making factory, which makes similar cartons for a number of local firms. The average shortage of all those weighed is — 7.35 per cent. In this store all the scales were listed as correct. This not only proves that the full extent of the short weight delivered can not be determined by the condition of the scales alone; but that when guesswork enters into business large frauds are almost bound to result.

The package table follows:

PACKAGE TABLE.

Commodity.	Weight.		Number.			Heaviest.		Lightest.		Average.		Errors—average.	
	Pounds.	Ounces.	Total weight.	Full weight.	Light weight.	Pounds.	Ounces.	Pounds.	Ounces.	Pounds.	Ounces.	Ounces.	Per cent.
Sugar	4	------	7	----	7	3	15.44	3	12.81	3	14.39	— 1.61	2.5
Nuts	1	------	1	1	----	----	-------	----	-------	----	14.12	+ 1.12	+ 7.
Coffee	1	------	1	----	1	----	-------	----	-------	----	14.	— 2.	—12.2
B. sugar	4	------	1	----	1	----	-------	----	-------	3	14.06	— .94	— 3.
Rice	2	------	1	----	1	----	-------	----	-------	1	12.69	— 3.31	—10.3
Beans	4	------	1	1	----	----	-------	----	-------	4	1	+ 1.	+ 1.5
Macaroni	1	8	1	----	1	----	-------	----	-------	----	22.44	— 1.56	— 6.5
Cut sugar	1	------	1	----	1	----	-------	----	-------	----	15.06	— .94	— 5.9
Tea	1	------	1	----	1	----	-------	----	-------	----	15.31	— .69	— 4.3
Tea	1	------	1	----	1	----	-------	----	-------	----	15.12	— .88	— 5.5
Rice	3	------	1	----	1	----	-------	----	-------	2	15.62	— .38	— .8
Pepper	----	6.4	1	----	1	----	-------	----	-------	----	4.38	— 2.02	—31.6
Beans	4	------	1	----	1	----	-------	----	-------	3	12	— 4.	— 6.2
Ham	----	11.4	1	----	1	----	-------	----	-------	----	10.62	— .78	— 6.8
Sugar	4	------	1	----	1	----	-------	----	-------	3	11.38	— 4.62	— 7.2
Pepper	----	6.5	1	----	1	----	-------	----	-------	----	5.25	— 1.25	—19.
Prunes	4	------	1	1	----	----	-------	----	-------	4	1.75	+ 1.75	+ 2.7
Crackers	1	------	1	----	1	----	-------	----	-------	----	13.25	— 2.75	—17.
Totals			24	3	21								

Per cent of packages short, 87.
Average shortage of packages, 5.8 per cent.

When the above chaotic conditions are considered, and when it is further remembered that the greatest frauds with which the sealers of Portland and Spokane have to contend, is the delivery of short coal and wood loads, the shortages which must exist in these deliveries here must, we believe, be apparent to all. And the consumers are undoubtedly being swindled out of very large sums in this way, also. This matter, however, could not be investigated.

The conditions then as revealed by this inspection are most chaotic and deplorable, and the loss to the consumer and to the honest merchant is an enormous one. We believe that there is, without question, an imperative necessity for a stringent law regulating weights and measures and establishing local inspection services. It is apparent, after a careful study of the subject, that a law of the greatest efficiency can not be legally passed before a constitutional amendment is adopted.

There is at the present time before the Legislature a law which, we believe, is the best which can be enacted with the present constitutional limitations. We strongly urge the passage of this law in order that some measure of relief may be immediately obtained. And we also believe that the constitutional amendment, also introduced, should be favorably considered, so that at a coming session the law may be so amended that the greatest efficiency of enforcement may be obtained.

ORDINANCE NO. 1383.

Be it ordained by the people of the city and county of San Francisco as follows:

SECTION 1. It shall be unlawful for any person, firm or corporation to sell, or offer for sale, or to cause or permit to be sold, or offered for sale, any butter in prints or packages, or otherwise, other than by, or in terms of pounds and ounces, avoirdupois, or for a greater weight than the true net weight thereof.

SEC. 2. Any person, firm or corporation who shall violate any of the provisions of this ordinance shall be punished by fine of not less than ten dollars nor more than one hundred dollars, or by imprisonment in the county jail for a period of not less than five days, nor more than fifty days, or both such fine and imprisonment.

SEC. 3. This ordinance shall take effect and be in force immediately.

In Board of Supervisors, San Francisco, November 21, 1910.

REPORT ON AN INVESTIGATION OF THE WEIGHTS AND MEASURES CONDITIONS FOUND IN FRESNO, CALIFORNIA, BY THE BUREAU OF STANDARDS, IN FEBRUARY, 1911.

The city of Fresno, California, in common with all the cities of the states thus far inspected, has no inspection of the weights and measures in commercial use, no local standards of weight or measure, and no ordinances on the subject. These things, taken in connection with the lack of any efficient State laws, leaves the inhabitants of the city wholly unprotected in this important matter.

An inspection of representative stores throughout the city reveals existing conditions which most nearly show the need of some regulation in this matter. In the following report, the condition of the apparatus in use will first be presented, after which other matters of importance will be considered. The scale table follows:

SCALE TABLE.

Type.	Total number tested.	Correct within 3 per cent.		Incorrect.		Fast—Minus. Slow—Plus.				Otherwise faulty.
		Number.	Per cent.	Number.	Per cent.	3-6 per cent.	6-9 per cent.	9-12 per cent.	Over 12 per cent.	
Beam	2			2	100	+1	+1			
Computing	32	15	46.9	17	53.1	—3; +5	—4	—1	—1 (17%)	3
Spring	5	1	20	4	80	—3	—1			
Totals	39	16	41	23	59	—6; +6	—5; +1	—1	—1	3

Per cent columns, — 65 per cent; +35 per cent.
Large meat scale —1 to —2 —¾ (variation in error caused by position).

"Otherwise faulty" scales are those showing errors of plus-minus ½ oz. or more at any point from 8 oz. to 3 lbs., inclusive; plus-minus 1 oz. from 3 lbs. to 10 lbs., inclusive; plus-minus 2 ozs. above 10 lbs.; or scales which, on account of faulty construction or their condition, are liable to show these errors.

It will be seen from the above table that but 41 per cent of the scales found in use are correct, the remaining 59 per cent showing discrepancies greater than the tolerances allowed in these tabulations. It may be remarked that the errors are not quite as large as in some of the larger cities heretofore inspected and that a somewhat smaller percentage is apparently due to fraud. The widespread prevalence of the faulty apparatus taken in conjunction with the fact that the average error on the incorrect scales is 4.8 per cent, making the average error on every scale found in use and inspected 2.8 per cent, is entirely sufficient to show the imperative need of systematizing business by standardizing the apparatus in use. The additional fact that in some stores every amount done up must necessarily be short on account of the condition of the apparatus in use, only serves to strengthen the above statement.

The almost universal method heretofore found throughout the State of selling dry commodities by weight is very widely used here, also, and the errors to be expected on this class of commodities may be thus determined by reference to the scale table presented above. As usual, an exception is made in the case of cranberries which are being sold in the great majority of stores by the illegal liquid measure, the usual shortages of about 15 per cent necessarily resulting.

The print butter on sale here has a much lesser error than in preceding cities of the State heretofore reported upon. The data collected on the sale of this commodity is summarized in the following tables in the usual manner.

BUTTER TABLE.

Brand.	Size of print.	Number.			Average. ounces.	Errors—Average.	
		Total.	Full weight.	Light weight.		Ounces.	Per cent.
Danish	1-lb.	17	1	16	15.74	— .26	— 1.6
Gold Nugget	1-lb.	7	4	3	16.35	+ .35	+ 2.2
Miscellaneous	1-lb.	2	2		16.06	+ .06	+ .4
Totals		26	7	19			
Per cent of prints short							73
Average weight of prints						15.9	
Average shortage of prints						.1	.6
Danish	2-lb.	15	1	14	31.45	— .55	— 1.7
Primrose	2-lb.	3		3	31.05	— .95	— 3.0
Gold Nugget	2-lb.	2		2	30.98	— 1.02	— 3.2
Golden Glow	2-lb.	2		2	30.67	— 1.33	— 4.2
Ranch	2-lb.	1		1	32.0		
Total		23	1	22			
Per cent of prints short							95.6
Average weight of prints						31.28	
Average shortage of prints						.72	— 2.25
Per cent of all prints short							84
Average shortage of all prints							1.65

It will be seen from the above that but three brands in the 1-pound size are found on sale here and that 28 prints of these have been weighed. These brands average from — 2.2 per cent to — 1.6 per cent, the general average of this size being within .6 per cent of correctness. The 2-pound size, however, shows quite serious shortages, these brands averaging from — 1.7 per cent to — 4.2 per cent, the general average on this size being — 2.25 per cent short.

Thus, the general average shortage on the total amount sold is — 1.65 per cent.

Although this shortage means a large loss to the consumers of the city, it is of interest to investigate why the butter here is heavier than that sold in the northern cities of the State. It appears to us probable in this connection that the requirements for full weight in this commodity by the city of Los Angeles may have an influence in increasing the weight of the product sold here. For it is probably a fact that a large amount of butter made here is made in full-weight sizes to be shipped and sold in that city. And this, we consider, would naturally result in a more nearly full-weight product here also.

A somewhat associated reason is that in the 1-pound size but two brands are found extensively sold here; and one of these brands is stamped "1 pound"; and in most cases is practically full weight. This may have had effect on the other brand also.

In the case of the 2-pound sizes where more brands are found on sale the weight is seen to fall materially short. Basing an estimate of loss upon a population of 30,000, and making identical assumptions as in San Francisco, and other cities, the loss to the consumers here upon the butter purchased in the course of a year is somewhat in excess of $4,000.

Very few packages are found here done up by the merchants ready for delivery, yet in the few weighed, errors on an expensive commodity, such as coffee, sometimes are in excess of 7 per cent.

In conclusion, it may be said that fraudulent practices here, although less flagrant than in some cities heretofore inspected, and not unlike those already discovered to exist, are found; and the same recommendations, in regard to state legislation, reiterated in former reports are advised in this case.

REPORT ON AN INVESTIGATION OF THE WEIGHTS AND MEASURES CONDITIONS FOUND IN SAN JOSE, CALIFORNIA, BY THE BUREAU OF STANDARDS, IN JANUARY, 1911.

The city of San Jose, California, in common with the other cities of northern California, has no ordinances on the subject of weights and measures, no inspection of the weights and measures in commercial use and no standards of weights and measures by which those used here might be compared and their accuracy or inaccuracy determined.

In common, also, with those cities of the State heretofore inspected, the resulting conditions are most chaotic, short weights of various commodities are being constantly delivered and the consumer and honest merchant are suffering greatly thereby—the former by receiving less than the quantity represented and for which they pay, and the latter on account of the absence of a fair and equitable basis of competition.

The condition of the apparatus in commercial use, as revealed by an inspection made throughout the city, will first be considered, after which the manner of sale of commodities, amounts delivered, etc., will be discussed.

The scale table follows.

SCALE TABLE.

Type.	Total number tested	Correct within 3 per cent.		Incorrect.		Fast—Minus. Slow—Plus.				Otherwise faulty
		Number	Per cent	Number	Per cent	3-6 per cent	6-9 per cent	9-12 per cent	Over 12 per cent	
Beam	13	6	46	7	54			−1	−4	2
Computing	20	2	10	18	90	− 8; +1	−2	−1; +1	−1	4
Spring	12	4	33	8	67	− 4	−2	−1		1
Totals	45	12	26.7	33	73.3	−12; +1	−4	−3; +1	−5	7

"Otherwise faulty" scales are those showing errors of plus-minus ½ oz. or more at any point from 8 oz. to 3 lbs., inclusive; plus-minus 1 oz. from 3 lbs. to 10 lbs., inclusive; plus-minus 2 ozs. above 10 lbs.; or scales which, on account of faulty construction or their condition are liable to show these errors.

It will be seen from the preceding table that a very large majority of the scales in use here are incorrect, 73 per cent being in this condition, and thus only 27 per cent actually delivered the represented quantities of commodity. The usual predominance of scales giving short weight in distinction from those which deliver more than the indicated amount of commodity is very marked, 92 per cent of those specifically listed being in this condition. Many of the errors discovered are very serious ones, half of those specifically listed having a greater error than 6 per cent, while nearly 20 per cent have errors ranging from 12.5 per cent to 19 per cent.

The above record, we believe, conclusively indicates that fraudulent practices flourish here; and this fact is further proven by the distribution of scale errors in various stores. Thus, in one place of business every one of four scales in use delivered from 3 per cent to more than 6 per cent shortages in weight; in another every scale was so adjusted that 6 per cent shortages resulted; and in several others every scale in use was "fast." Other stores in competition with these have all the scales in use correct and are delivering full weight to the consumer.

As in other nearby cities recently inspected the weights in use are much more accurate than the scales. Some of these are inaccurate, but in general it appears that the existing errors are largely original faults of adjustment or the effect of long usage not counteracted by occasional tests and repair.

Also, no dry measures are being used, nearly all dry commodities being sold by weight. Where this general rule is digressed from the liquid measure is nearly always employed and the usual shortages of about 15 per cent necessarily follow.

Few liquid measures were found in use, the general tendency being to sell liquid commodities either in original packages or by guesswork; that is, by the filling of the container brought by the customer regardless of its actual content. The inaccuracies resulting from this method of sale have frequently been pointed out in the past. Of those measures tested, also, about 60 per cent were inaccurate, the majority being short. The greatest error on any measure found was a shortage of — 5.7 per cent.

A number of milk bottles were also tested. A large number of these showed variations, 50 per cent being short. These shortages were often slight and in many cases might have been caused by the inaccuracy inci-

dental to the making of this class of apparatus. An error found of about — 22 per cent, however, could not have been so caused and this indicates, we believe, that very considerable errors do exist on the bottles furnished and used by some of the dairy companies.

The sale of print butter was most chaotic, and nearly all of the prints were more or less short in weight. In tabulating this data great care has been exercised in an endeavor to depict actual existing conditions.

Therefore, when it appears that butter is sold to the customer or to the retailer as "lbs.", "2-lbs.", etc., such brands have been tested as these sizes. In some cases, however, retailers claimed that bricks were sold as $1\frac{3}{4}$ pounds and in these cases prints were so listed, although these were on the market in undoubted competition with "2-lbs." bricks. In one or two cases the retailer claimed that bricks, apparently 2 pounds, were sold as "short-weight" butter or by the "print" and when the price is reduced, and the statement seems to be borne out by the conditions of sale, the butter has not been included in the general averages, since it is desired to show the loss to the customer. The lack of fair competition and possibility of fraud when such "short-weight" butter is sold unstamped is, we believe, apparent from the above statement. The data on this subject has been listed in the usual manner in the following table:

BUTTER TABLE.

Brand.	Number.				Average ounces.	Errors—Average.	
	Size	Total.	Full weight.	Light weight.		Ounces.	Per cent.
Linda Vista	1-lb.	6		6	15.35	— .65	— 4.1
Edgewood[1]	1-lb.	6		6	14.4	— 1.6	—10.
Clear Spring[2]	1-lb.	2		2	14.38	— 1.62	—10.1
Central Creamery[3]	1-lb.	4		4	15.49	— .51	— 3.2
Santa Clara	1-lb.	3	1	2	15.46	— .54	— 3.4
Panochet Valley[3]	1-lb.	5	1	4	15.77	— .23	— 1.4
Red Clover	1-lb.	3		3	14.07	— 1.93	—12.1
Totals		29	2	27			
Per cent of prints short							93
Average weight of prints						15.06	
Average shortage of prints						.94	— 5.9
Linda Vista	2-lb.	6	1	5	31.64	— .36	— 1.1
Edgewood[6]	2-lb.	7		7	29.7	— 2.3	— 7.2
Clear Springs[4]	2-lb.	4		4	30.62	— 1.38	— 4.3
Central Creamery[4]	2-lb.	4		4	31.21	— .79	— 2.5
Santa Clara	2-lb.	2		2	30.82	— 1.18	— 3.7
Panochet Valley	2-lb.	3	3		32.13	+ .13	+ .4
Llagas River[5]	2-lb.	7		7	31.32	— .68	— 2.1
Camita	2-lb.	1		1	31.68	— .32	— 1.0
Totals		34	4	30			
Per cent of prints short							88
Average weight of prints						30.99	
Average shortage of prints						— 1.01	3.2
Ranch[7]	$\frac{3}{4}$-lb.	3		3	10.35	— 1.65	—13.8
Ranch[7]	$\frac{1}{2}$-lb.	6		6	3.21	— .79	—19.7
Clover Ranch[8]	$1\frac{3}{4}$-lb.	3		3	25.86	— 2.14	— 7.6
Totals		12		12			
Per cent of all prints short							92
Average shortage of all prints							— 4.61

[1]Billed as "lbs."
[2]Advertised as "lbs."
[3]Marked "lb." on wrapper.
[4]Advertised as "2-lbs."
[5]Marked "Two lbs." on wrapper.
[6]Billed as "2-lbs."
[7]So quoted.
[8]Claimed to be so sold.

B. and N. butter, 7 prints averaged 28.36 ounces (not averaged with other). Sold as "short-weight" butter.

Miscellaneous butter (not averaged with other). Dealer claims to weigh each brick and sell it at actual weight—4 prints averaged 12.88 ounces; 2 prints averaged 27.53 ounces.

It will be seen from the preceding tabulation that 93 per cent of the "pound" prints are short and that the general average shortage of all bricks of this size is — 5.9 per cent or very nearly an ounce to each pound. Individual brands average 1.4 to more than 10 per cent short. In a similar manner all "two-pound" prints show an average shortage of 3.2 per cent,, individual brands varying from +.4 per cent to — 7.2 per cent. Butter quoted as "¾ lb." and "¼ lb." show shortages of 13.8 per cent and 19.7 per cent respectively; and the 1¾ pound size is found to be 7.6 per cent short. The "short weight" 2-pound prints average only 28.36 ounces, while other sixes average 12.88 ounces and 27.53 ounces. While these latter brands have not been listed, they show shortages of from 14 per cent to 20 per cent when compared with standard sizes.

The general average shortage of all butter sold by weight is 4.6 per cent. Basing a loss on 25,000 inhabitants and using the data explained in the San Francisco report, the loss on this product alone in this small community is in excess of $11,000 per year.

All of the above results, we believe, point to but one conclusion, *i. e.*, that without inspection service losses are very large and fraudulent practices are very common. It has been continually shown in the past that only a rigid inspection service will serve to eliminate such losses to the consuming public and put business upon a fair and honest basis of competition; and in view of these facts we again urge the passage of the constitutional amendment and legislation now pending as imperatively necessary on account of existing conditions found here and in the former cities inspected in this State.

REPORT ON AN INVESTIGATION OF THE WEIGHTS AND MEASURES CONDITIONS FOUND IN OAKLAND, CALIFORNIA, BY THE BUREAU OF STANDARDS, IN JANUARY, 1911.

The city of Oakland, California, has no local ordinances on the subject of weights and measures, no city inspection service and no city standards of weights and measures with which those in commercial use might be compared. In the absence of State laws also, the people of the city are totally unprotected in this important matter. An inspection made throughout the stores and market places of the city shows that inspection and competent laws are very greatly needed here, and that in their absence conditions are such that the people are losing an enormous sum of money each year on account of shortages in the amounts of commodity delivered to them.

The condition of the apparatus in use, the weights of packages done up ready for delivery to the consumer, and the manner of sale and weight of special commodities all tend to prove the above statement. These conditions are detailed on the following pages, the condition of the apparatus in use being first considered. The scale table follows.

SCALE TABLE.

Type.	Total number tested.	Correct		Incorrect.		Fast—Minus. Slow—Plus.				Otherwise faulty.
		Number.	Per cent.	Number.	Per cent.	3-6 per cent.	6-9 per cent.	9-12 per cent.	Over 12 per cent.	
Beam	6	4	66.7	2	33.3	— 1				7
Computing	56	22	39	34	61	—14	— 9 +1	—3	—2	5
Spring	33	6	18	27	82	— 8 +2	— 2 +2	—2	—5	6
Totals	95	32	33.7	63	66.3	—23 +2	+3 —11	—5	—7	12

"Otherwise faulty" scales are those showing errors of plus-minus ½ oz. or more at any point from 8 oz. to 3 lbs., inclusive; plus-minus 1 oz. from 3 lbs. to 10 lbs., inclusive; plus-minus 2 ozs. above 10 lbs.; or scales which, on account of faulty construction or their condition, are liable to show these errors.

It will be seen from the above table that but 34 per cent of all the scales inspected were correct within the usual tolerances, the remaining 66 per cent delivering inaccurate quantities of commodity. Of those incorrect, specifically listed in the per centage columns, 90 per cent were "fast" as distinguished from the remaining 10 per cent which delivered more than the indicated amount. As usual, the errors on the "slow" scales averaged much smaller than those which were in favor of the user, and in this case no scale was listed as more than 9 per cent slow; the scales which delivered underweight often showed most serious errors, nearly 25 per cent of all scales in the percentage columns having a greater error than 9 per cent; while about 14 per cent had errors ranging from 12.5 per cent to 28 per cent.

The above percentage and class of errors do not differ very greatly from those already found in the neighboring city of San Francisco, where only 34 per cent of the scales in use were found correct. It may be said, however, that the smaller stores in Oakland are relatively better than similar stores in San Francisco, while the larger stores show more tendency to fraud here.

An analysis of the above table shows so many large errors and such a preponderance of "fast" scales that fraud is indicated in very many cases. Further analysis confirms this belief. Thus, in one large stand in one of the best market places of the city, doing a very large business, seven expensive scales were in use, and every one was so set that shortages of from three to eleven per cent were constantly delivered. Another stand had three scales of a similar make and here also every one delivered shortages of from 3 to 6 per cent. Again, in one of the largest stores in the city, of the fourteen scales in use, nine were delivering short weight from 1.7 per cent to 12 per cent, the scales in which more expensive commodities were being weighed being in this condition. And the result of the use of such scales, as well as deliberate underweighing, is shown when it is discovered that of fifty-one packages ready for delivery to the customer, 82 per cent were short from .8 per cent to 9.4 per cent. The proprietor here showed his criminal knowledge of conditions by his strenuous objections to having his packages reweighed.

The public fuel market, which does a large business, is in deplorable condition and fraud of all kind exists. Although an inspection was made here, only a few scales have been recorded, in order that these con-

ditions would not outweigh in importance the conditions found throughout the city as a whole. And it is a fact that in the above table a change of only one or two per cent was caused by this work. The proprietor of this market has endeavored to prevent the use of faulty apparatus and a sign is prominently displayed at the entrance requesting that complaints of short weighing be made. He reports that on account of the lack of a city inspector very large frauds were committed in stores near the market outside of his jurisdiction, and his endeavors were made more difficult on this account. As usual in this section, few beam scales with attached computing devices were found; and the weights showed but little tampering. Those found were usually within the tolerances allowed; errors, when found, were largely caused, we believe, by ordinary wear not counteracted by efficient inspection and adjustment.

As usual, also, few dry measures were found in use, and the manner of sale of these commodities can only be determined by the condition of the scales above set forth. Cranberries, of which few were being sold, were largely illegally retailed by the liquid measure; shortages of about 15 per cent necessarily resulted. It appears that this method of sale is always common, although they are occasionally sold by legal weights.

The liquid measures found in use were largely short, but these shortages bear evidence of being original errors of manufacturing, rather than of any alteration made by the merchants. It is reported by dealers that the shortages in their measures were known to them, but that nearly all of those on sale were short, and standard-size measures were difficult to procure in the city. The disuse of liquid measures in some stores was also noted, and in these cases, shortages on liquid commodities necessarily followed, since containers brought by consumers very often failed to hold their supposed capacity.

The sale of butter in print form is of very great importance on account of the high price of this commodity, as well as the fact that butter is nearly always retailed in this form here, bulk butter being very rarely encountered. In the investigation of this matter, 182 prints of the various sizes sold have been weighed.

REPORT ON AN INVESTIGATION OF THE WEIGHTS AND MEASURES CONDITIONS FOUND IN STOCKTON, CALIFORNIA, BY THE BUREAU OF STANDARDS, IN JANUARY, 1911.

The city of Stockton, California, in common with the other cities in the northern part of the State, has no local ordinances on the subject of weights and measures, no local officials to test the apparatus in commercial use and no official standards of weight and measure.

As a result of this neglect by the State and city, the conditions existing here are very chaotic, and large inaccuracies in the amounts delivered as standard quantities result; and the consuming public is suffering very large losses thereby.

The condition of the apparatus in use will first be considered, after which the manner of sale and weights of special commodities will be presented. The scale table follows.

SCALE TABLE.

Type.	Total number tested.	Correct.		Incorrect.		Fast—Minus. Slow—Plus.				Otherwise faulty.
		Number.	Per cent.	Number.	Per cent.	3-6 per cent.	6-9 per cent.	9-12 per cent.	Over 12 per cent.	
Beam	4	1	25	3	75	+1				2
Computing	23	6	26	17	74	−4	−4	−2	1 (+24%)	5
						+1				
Spring	11	4	36	7	64	−2	−1			4
Totals	38	11	29	27	71	−6	−5	−2	+1	11
						+2				

It will be seen from this table that only 29 per cent of the scales tested in a number of different stores of the city are correct, the very large percentage of 71 per cent delivering inaccurate quantities. Moreover, these latter scales are largely in the favor of the merchant maintaining them, since 81 per cent of those listed in the percentage columns tend to give short rather than over weight. These figures show more inaccurate apparatus than that recently found in San Francisco, and indicate fraudulent practices. Fraud is undoubtedly present, and while individual shortages are not always as great as in the larger cities, since smaller errors on scales usually appear, it is a fact that half of the scales mentioned above have an error of greater than 6 per cent. The average error on all the incorrect scales is 4.3 per cent, making the average error on every scale examined 3.6 per cent. It will be at once seen, therefore, that the percentage of fraud becomes of very great importance to the consumer of the city, and to the honest merchant who is obliged to withstand widespread, dishonest competition.

As mentioned, the percentages found indicate fraud, and the distribution of errors tends to still further confirm this impression. Thus, in some stores, all the scales in use are practically correct, while in others the large majority in use are imperfect. Thus, in one store five scales out of six in use are noted as having errors producing deficiency in weight delivered; in another store two out of the three scales in use have shortages of 4 per cent and 9 per cent, respectively; and several others have every scale in use incorrect. Also some stores use scales of the cheapest construction, such as family spring scales, for weighing coffee, tea, and other high-priced commodities for which they are wholly unsuited, some having natural variations of more than 6 per cent.

As is usual in most cities in California, few very serious errors are found upon the weights in use. The greatest discrepancies discovered are errors of slightly less than 1½ per cent upon counterpoise weights having ratios of (8-1) and (64-1). Such errors developed shortages of about one half pound on eighty pounds on this scale.

The custom of selling dry commodities by weight is adhered to here as in those cities of the State reported upon previously. Cranberries, which have been found to be an exception to the general rule, are largely out of season, but that these are sold by liquid measure is indicated by the fact that those on sale are all noted as being retailed in this way, the usual shortages of about 15 per cent necessarily resulting.

The liquid measures in use are quite largely inaccurate. but the errors found seem to be the faults of original manufacture and subsequent

deterioration rather than any fraudulent alteration on the part of the users. Consequently, measures are found both large and small, errors of more than 6 per cent existing in some cases.

The sale of creamery butter in print form here is very chaotic and large shortages exist, and consequently the loss to the consumers of the city is a very great one. Only two sizes are found, *i. e.*, the two-pound and one-pound, and although some manufacturers are billing their product by the "roll," in the great majority of cases these reach the consumer at the above stated weights. Since it is not apparent that any reduction whatever has resulted from the shortages in the weights furnished, it must be concluded that any such shortage is an actual loss to the consumer. One hundred and fifty-six pounds of the product furnished here was weighed up in individual prints. The data so collected has been tabulated in the usual way, and is contained in the following table:

PRINT BUTTER.

Brand.	Size.	Number.			Average ounces.	Errors—Average.	
		Total.	Full weight.	Light weight.		Ounces.	Per cent.
Crown	2-lb.	17		17	30.59	— 1.41	— 4.5
Stockton	2-lb.	10		10	30.43	— 1.57	— 4.9
Banner	2-lb.	5	1	4	31.56	— .44	— 1.4
Cracker Jack	2-lb.	5	2	3	31.34	— .66	— 2.1
Gilt Edge	2-lb.	5	1	4	31.63	— .37	— 1.2
Valley	2-lb.	3		3	30.3	— 1.70	— 5.3
Griffiths	2-lb.	5		5	30.12	— 1.88	— 5.9
Riverside	2-lb.	8	2	6	31.56	— .44	— 1.4
Miscl. ranch and dairy	2-lb.	6	2	4			
Totals		64	8	56			
Per cent of prints short							88
Average weight of prints						30.93	
Average shortage of prints						— 1.07	— 3.3
Stockton	1-lb.	5	1	4	15.59	— .41	— 2.6
Crown	1-lb.	10		10	15.31	— .69	— 4.2
Valley	1-lb.	10		10	15.09	— .91	— 5.7
Ranch	1-lb.	3	2	1	16.21	+ .21	+ 1.3
Totals		28	3	25			
Per cent of prints short							—90
Average weight of prints						15.38	
Average shortage of prints						— .62	— 3.88
Per cent of all prints short							—88
Average shortage of all prints							— 3.4

It will be seen that of the 64 two-pound prints of nine different brands weighed, 88 per cent are short; the average weights of the various brands being short by amounts varying from 1.4 per cent to 5.9 per cent, the heaviest brand being the product of local ranches and dairies. The average shortage on all of this size sold is found to be — 3.3 per cent.

Of the one-pound prints of four different brands discovered on sale and weighed, 90 per cent are short. One brand, the product of local ranches and dairies, is overweight by +1.3 per cent. The other brands all average short by amounts varying from — 2.6 to — 5.77 per cent; the average shortage on all of this size is 3.88 per cent.

These figures make a total of 88 per cent of the butter short, with an average shortage on the entire product of — 3.7 per cent.

On a total of 30,000 inhabitants, the loss, making the same assumption as in San Francisco and Oakland, is slightly in excess of $10,000 a year on this one commodity alone.

Not enough packages done up for delivery were found here to make the average a fair criterion of the city. It may be stated, however, that 75 per cent of the stores showed an average shortage on all packages weighed, this varying from — 1.8 per cent to — 5.4 per cent. Individual packages sometimes showed discrepancies of nearly 14 per cent.

It will be seen, then, that conditions here do not vary greatly from those detailed in the cities of the State inspected and reported upon previously. And it is clear that remedial legislation of the same character as that detailed heretofore is very necessary here also.

REPORT ON AN INVESTIGATION OF THE WEIGHTS AND MEASURES CONDITIONS FOUND IN SACRAMENTO, CALIFORNIA, BY THE BUREAU OF STANDARDS, IN DECEMBER, 1910.

The city of Sacramento, the capital of California, has no ordinances in relation to weights and measures, no inspection service, and no city standards of weights and measures by means of which the accuracy of the apparatus in commercial use might be determined.

The standards furnished the State by the United States Government are by law placed in the custody of the Secretary of State, and are kept in the capitol building. The present incumbent of the office states that the set was incomplete at the beginning of his term and had been so for some years. The apparatus on hand was examined, and it was found that most of the avoirdupois weights and a few other pieces were missing. A list of the apparatus and the condition of the same are detailed on the state sealer's record sheet attached to this report.

The general conditions existing throughout the city as revealed by this inspection shows very clearly the chaotic state of affairs, following the neglect of this subject by the State and local authorities.

The condition of the apparatus in use will first be detailed, after which the weights and manner of sale of special commodities will be considered. The scale table is first presented:

SCALE TABLE.

Type.	Total number tested.	Correct within 3 per cent.		Incorrect.		Fast—Minus. Slow—Plus.				Otherwise faulty.
		Number.	Per cent.	Number.	Per cent.	3-6 per cent.	6-9 per cent.	9-12 per cent.	Over 12 per cent	
Beam	1	1	100							
Computing	14	3	21	11	79	— 8	— 1		— 1	1
Spring	13	3	23	10	77	— 2	— 1; +1	— 1	— 2 (— 6 to 25%)	3
Totals	28	7	25	21	75	— 10	— 2; +1	— 1	— 3	4

"Otherwise faulty" scales are those showing errors of plus-minus ½ oz. or more at any point from 8 oz. to 3 lbs., inclusive; plus-minus 1 oz. from 3 lbs. to 10 lbs., inclusive; plus-minus 2 ozs. above 10 lbs.; or scales which, on account of faulty construction or their condition, are liable to show these errors.

It will be seen from the above table that only 25 per cent of the scales in use found in all parts of the city can be listed as correct, the usual tolerances being granted in every case. The cases in which faulty scales are giving overweight are so few as to be practically negligible,

only 6 per cent of those listed in the percentage columns being in this condition. In some cases the errors were very serious, being over 12 per cent in 18 per cent of the above class; and 41 per cent had a greater error than 6 per cent. Many of these scales were very faulty in construction, or in a very dilapidated condition, as is evidenced by one scale which had a varying error of from 6 per cent to more than 40 per cent, according to the way in which the commodity to be weighed is placed upon the pan. A line of groceries was being retailed by the use of this scale, and a large amount of poultry at a high price per pound was also being sold by the weights indicated on this scale.

Although some of the errors were probably due to carelessness or ignorance, fraud is shown, we believe, by the great preponderance of "fast" scales as distinguished from those which give more than the indicated amount. In many stores every scale in use delivered less than the represented amount, and thus in these stores the great majority of delivered packages were short in weight.

Very few beam scales without springs or attached computing devices were found, as is indicated by the above table. As a result, very few weights are in use, and thus few have been tested. These are usually within the tolerance allowed, although a few show discrepancies.

As usual in this section, no dry measures are being used, vegetables, etc., being bought and sold by weight in the majority of cases. An exception usually occurs in the case of cranberries, these being largely sold by liquid instead of dry measure, the usual shortages, approximating 15 per cent, resulting.

The liquid measures in use do not show any signs of having been fraudulently altered and have about the same errors as when manufactured. These errors are usually not greater than 2 per cent and variations both in excess and deficiency were disclosed.

The majority of the butter sold here is retailed in "brick" or "print" form of "one" and "two-pound" sizes, the latter being the more usual size. The weight of the "print" delivered is of the greatest importance since shortages mean an enormous aggregate loss to the consumers of the cities. In the investigation of this matter 112 "lbs." of butter of six different brands found on sale have been weighed, the data being presented in the following table:

BUTTER TABLE.

Brand.	Size.	Number.			Average ounces.	Errors—Average.	
		Total.	Full weight.	Light weight.		Ounces.	Per cent.
Crystal Cream	1-lb.	9		9	15.44	— .56	— 3.5
The Creamerie*	1-lb.	7	3	4	15.86	— .14	— .9
Totals		16	3	13			
Per cent of prints short							81.0
Average weight of prints						15.63	
Average shortage of prints						.37	— 2.3
Crystal Creamery	2-lb.	6		6	31.01	— .99	— 3.1
Cornellia	2-lb.	12		12	31.36	— .64	— 2.0
Monarch	2-lb.	13		13	30.73	— 1.27	— 4.0
Best Creamery†	2-lb.	9		9	31.38	— .62	— 1.9
The Creamerie	2-lb.	5		5	30.71	— 1.29	— 4.
Ranch butter	2-lb.	3		3	30.97	— 1.03	— 3.2
Totals		48		48			
Per cent of prints short							100
Average weight of prints						31.06	
Average shortage of prints						.94	2.9

*Marked "One pound. Full weight." †Marked "Full weight. Two pounds."

It will be seen from the above table that of 48 "two-pound" prints weighed, every one was short. The heaviest brand was marked "Full Weight. Two Pounds," and lacks an average of .62 ozs. on each print; a shortage of 1.9 per cent, while the two lightest brands averaged only 30.71 and 30.73 ounces in weight, the shortage in this case being 1.29 ounces and 1.27 ounces, or 4 per cent per print. Individual "two-pound" prints were sometimes 3 ounces, or 9.4 per cent short.

In the "pound" size, two brands are found. The heavier was marked "One Pound. Full Weight," and weighed 15.86 ounces, the shortage thus being only .14 ounces, or .9 per cent per print. The lightest brand had an average shortage of .56 ounces, or 3.5 per cent, the average of all prints of this size found being 15.63 ounces, a shortage of 2.3 per cent. When it is considered what an enormous aggregate number of pounds of butter are used by the people of the city, the above shortages will be seen to represent an enormous loss to the people in the course of a year.

With the above record of apparatus it is to be expected that shortages will generally exist in the amounts of commodity delivered to the consumer. The use of the majority of faulty scales could not be checked in this way since on these scales packages are rarely done up and kept ready for delivery; but are usually weighed only as ordered. In several stores packages were found, and those weighed have been tabulated in the following table:

PACKAGES DONE UP IN STORES BY WEIGHT READY FOR DELIVERY.

Commodity.	Size.			Number.			Heaviest.		Lightest.		Average.		Errors.			
													Greatest.		Average.	
	Pounds.	Ounces.	Quarts.	Total.	Full weight.	Light weight.	Pounds.	Ounces.	Pounds.	Ounces.	Pounds.	Ounces.	Ounces.	Per cent.	Ounces.	Per cent.
Sugar	1			8		8		14.25		12.94		13.73	— 3.66	— 19.1	2.27	14.2
Sugar	3			3	1	2	3	1.75	2	15.31	3	.25			+ .25	+ .5
Sugar	6			1		1					5	14.25			— 1.75	— 2.
Sugar	12			1		1					11	13.			— 2.	— 1.6
Popcorn	1			6		6		15.81		13.5		15.09	— 2.5	15.6	— .91	— 5.7
Totals				19	1	18										
Per cent of packages short																95
Average shortage of packages																7.9
Scales: 1—12%; 1 varies —6% to —43%.																
Mixed nuts	2			5		5	1	15.88	1	14.94	1	15.38			— .62	— 2.0
Mixed nuts	2			9		9	1	15.12	1	13.62	1	14.28			1.72	— 5.4
Prunes	1			1	1						1	.12			+ .12	+ .7
Prunes	1	8		2	1	1	1	8.18	1	7.88	1	8.03			+ .03	O. K.
Coffee	1			1	1						1	.25			+ .25	+ 1.6
Cranberries*			2	5		5		28.06		26.9		27.2			— 4.8	—15.
Totals				23	3	20										
Per cent of packages short																87
Average shortage of packages																— 5.7
Scales: 1 —35%; 1 4.7%.																
Nuts	1	4		1		1					1	3.06			— .94	— 4.7
Nuts	3			1	1						3	.56			+ .56	+ 1.2
Coffee	1			1		1						15.69			— .31	— 2.
Sugar	1	8		1		1					1	7.88			— .12	— .5
Cranberries*			1	1		1						13.44			— 2.56	—16.
Cranberries*			2	1		1					1	13.38			— 2.62	— 8.2
Totals				6	1	5										
Per cent of packages short																83
Average shortage of packages																— 5.2

Scales: 1 —4.5%; 1 —3%; 1 O. K.; 1 variable error.
*Weight taken as lowest legal weight in any state "16 ounces per quart."

It will be seen from the above that every store in which packages have been weighed has more than 80 per cent of these short in weight. Average shortages on all packages are 7.9 per cent, 5.7 per cent and 5.2 per cent, respectively. Individual packages were sometimes 19 per cent short of the represented amount. And it will be seen that in two of the three stores the average shortage of the packages found is greater than the shortage on any scale in the store, indicating that the weights delivered were even shorter than would be indicated by the scales themselves.

Summarizing the above data it will be noted that 89 per cent of all the packages found done up were short in weight, and that the total average shortage amounted to 6.5 per cent.

We believe that it is unquestionable that the above data represents a most chaotic state of affairs. The large percentages of faulty apparatus; the shortages in the prints of butter; the manner of sale of commodities; and the shortages in general commodities delivered, all point to the imperative necessity of an inspection service which will keep the apparatus correct and so supervise the sale of commodities that fraud will become the exception rather than the rule, as seems to be at present the case. And until laws are passed by the State and local government regulating this important matter, a very large loss to the consuming public and to the honest and legitimate merchant is bound to continue unchecked.

REPORT ON WEIGHTS AND MEASURES CONDITIONS FOUND IN LOS ANGELES, CALIFORNIA, BY THE BUREAU OF STANDARDS, IN JANUARY, 1911.

The city of Los Angeles, California, has by ordinance created the office of Sealer of Weights and Measures and provided the powers and duties of such officer. This ordinance, a copy of which is attached, is quite a good one, although we believe it might be improved by providing for confiscation of incorrect apparatus, etc. The system provides for the collection of fees for work done and this, we believe, is unjust; and, in addition, prevents the best coöperation between the merchants and the sealer. Although fees are never charged more than once in each year, it is found that great bitterness is sometimes engendered when more frequent inspections are made, and this seems bound to cause unnecessary friction between the sealer and the merchants of the city. The sealer here is not in favor of the fee system, but thus far it has been impossible to have the fees abolished. Since every person in the city benefits by the inspections, however, it seems a more equitable proceeding to require the support of the department by direct taxation, rather than by levying a tax on a particular class, which is the result of the present method. It has been continually shown in the past, also, that higher efficiency almost invariably follows a change of this character.

The sealer is provided with an office in the city hall, with the necessary standards with which to carry on his work and with a horse and wagon to properly transport the standards throughout the city. Up to a short time ago a set of weights and measures were set aside for primary standards, and these were used only to test the working standards in actual use. Since the recent appointment of an additional deputy,

however, it has been found necessary to convert all standards into working standards; as a result, the city has no primary standards of weight and measure.

The force of the department consists of a sealer and two deputies. The actual tests are usually made by two of these men, the third spending the majority of his time in the investigation of complaints, the prosecuting of offenders, and other special work. This force is able to test practically all the apparatus in use in the city about once in each year, and often makes special or surprise inspections more frequently than this. Loads of coal are frequently reweighed, as are packages done up by the merchant ready for delivery; print butter is also frequently weighed by the department.

It is reported by the sealer that it is found necessary to proceed against about six or seven offenders a month, for violation of the ordinances. In nearly every case the proceedings are successful. Fines levied vary from $20 in the average case to $100, the maximum under the ordinance, in exceptional cases.

It may be said at once that the conditions existing here are far better than in any city of California visited up to the present time, and that it is apparent that this is the direct result of the inspection service in vogue. A résumé of the apparatus inspected will, we believe, at once prove the correctness of the above statement; and the following tabulations showing the manner of sale of commodities, weights of special commodities, etc., will serve to confirm this impression.

The tabulation of the condition of the scales inspected here follows:

SCALE TABLE.

Type.	Total number tested.	Correct within 3 per cent.		Incorrect.		Fast—Minus. Slow—Plus.				Otherwise faulty.
		Number.	Per cent.	Number.	Per cent.	3-6 per cent.	6-9 per cent.	9-12 per cent.	Over 12 per cent.	
Beam	33	29	88	4	12	—3		—1		
Computing	59	36	61	23	39	—8; +2	—8; +1	—2		2
Spring	37	14	38	23	62	—6; +1	—1	—3	—4*	8
Totals	129	79	61.2	50	38.8	—17 +3	—9; +1	—6	—4	10

* One of these was minus 19 per cent and one minus 28 per cent.

"Otherwise faulty" scales are those showing errors of plus-minus ½ oz. or more at any point from 8 oz. to 3 lbs., inclusive; plus-minus 1 oz. from 3 lbs. to 10 lbs., inclusive; plus-minus 2 ozs. above 10 lbs.; or scales which, on account of faulty construction or their condition, are liable to show these errors.

It will be seen from the above table that 61.2 per cent of all the scales tested throughout the city are correct within the usual tolerances; the remaining 38.8 per cent delivering inaccurate quantities. As usual, those scales incorrect are largely delivering less than the indicated amounts, 90 per cent of those specifically listed being in this condition here. Several scales, all of these of the spring variety, have serious errors of more than 12 per cent. Fifty per cent of the scales listed in the percentage columns have the smallest listed percentage error, however, *i. e.*, 3 to 6 per cent; while 75 per cent are within 9 per cent.

Analyzing the types of scales, we find the scales without attached springs or computing devices the most accurate class, with 88 per cent correct. Computing scales follow with 61 per cent accurate; while the

spring scales have only 38 per cent correct. In regard to this latter class it should be stated that many spring scales of the cheapest construction are in use, and that many of these are incorrect when sold. In one distributing store the sealer reports that 75 per cent of this type on sale were incorrect; and your inspector tested one here which sometimes showed an error of 38 per cent on one pound. Yet the sealer has no authority to prevent their sale and as a result many are found in use. It is then much more difficult to eliminate them; partly because of the infrequency of the tests; and partly because the merchants advance the argument that they were bought in good faith and they should be protected from being imposed on in this way. There is certainly a firm foundation for the last contention, and the authority of the sealer should extend over all apparatus on sale over which he now eventually has jurisdiction. This is one of the features of the State legislation endorsed by this Bureau.

In order to show the general increase in accuracy due to the inspection service a comparison might be drawn between Los Angeles and the combined cities of San Francisco and Oakland, California, these cities being the only ones having an adequate population for direct comparison of conditions. In order to facilitate this object, the following figures may be presented:

City.	Total number scales tested.	Per cent of total scales correct.	Average per cent of error on all incorrect scales.	Average per cent of error on all scales.
Los Angeles	129	61.2%	5.76%	2.31%
San Francisco and Oakland	230	33.9%	6.85%	4.53%

The above table shows the following facts: First, that 80 per cent more of the scales are incorrect in the combined cities than in Los Angeles; second, that the average error on incorrect scales is 19 per cent greater in the combined cities; and, third, that the error on the average scale in use is 96 per cent greater in the combined cities than on the average scale in use in the city of Los Angeles; and this figure furnishes a direct basis of comparison between the districts mentioned. We consider that the above figures carry an incontrovertible conclusion, and furnish an argument for inspection service which no reasoning can gainsay.

The weights in use on the beam scales show a perfect record, 93 per cent being within one half of one per cent, while the remaining 7 per cent have an error of less than one per cent in every case.

Dry commodities are here almost universally sold by weight, no dry measures being found in use. Cranberries are sometimes sold by liquid measure, although so very few are now on the market that it is difficult to determine how extensively this practice prevails. The sealer admits that up to the past year they have been sold in this manner. During the past season an endeavor was made to eliminate the practice and it was to some extent abolished.

The liquid measures found in use are usually accurate, 88 per cent being within 3 per cent of the correct size. The greatest shortage found is 5.6 per cent on the pint size. A Mason's quart jar used as a bulk measure was being filled in such a way that shortages of 4.3 per cent were delivered, although the jar filled absolutely full held the required

amount. No faulty oil pumps have been found in use here. Recently tests have been made by the city department upon the large liquid measures used by the oil companies and milk dealers of the city. A large number of these have been found to be short and such measures are being condemned and replaced. Seventy-two 5-gallon measures belonging to an individual company have thus been removed from use.

As noted above, the department has made a very serious effort to compel the sale of full-weight butter to the consumers and merchants of the city. A large number of prints of various brands have been weighed to determine the result of these efforts on the part of the local officials. The subject is of additional interest on account of an ordinance of the city which compels the sale of butter by weight.

The data collected is tabulated in the usual manner. This table follows:

BUTTER TABLE.

Brand.	Size.	Number.			Average ounces.	Errors—Average.	
		Total.	Full weight.	Light weight.		Ounces.	Per cent.
Santa Ana	1-lb.	35	2	33	15.48	— .52	— 3.3
La France	1-lb.	20		20	15.57	— .43	— 2.7
Imperial	1-lb.	15	9	6	15.87	— .13	— .8
Our Special	1-lb.	16	4	12	15.68	— .32	— 2.0
Whittier	1-lb.	16	5	11	15.9	— .10	— .6
Rivera	1-lb.	16		16	15.51	— .49	— 3.1
Maple Grove	1-lb.	12	1	11	15.41	— .59	— 3.7
Geo. H. Smith	1-lb.	10		10	15.68	— .32	— 2.0
Pansy	1-lb.	9	1	8	15.75	— .25	— 1.6
Clover Glen	1-lb.	13	2	11	15.72	— .28	— 1.7
Crescent	1-lb.	8	2	6	15.67	— .33	— 2.1
El Centro	1-lb.	7		7	15.35	— .65	— 4.1
Santa Anita	1-lb.	9	7	2	15.99	— .01	O. K.
Challenge	1-lb.	7	1	6	15.79	— .21	— 1.3
Ralph's Best	1-lb.	7	3	4	15.82	— .18	— 1.1
Ralph's	1-lb.	8	4	4	15.97	— .03	O. K.
Normandie	1-lb.	7		7	15.43	— .57	— 3.6
Orange County	1-lb.	7		7	15.21	— .79	— 4.9
Central Cream	1-lb.	7		7	15.61	— .39	— 2.4
Oak Glen	1-lb.	6		6	15.78	— .22	— 1.4
Pride of California	1-lb.	6	4	2	15.97	— .03	— .2
Poppy	1-lb.	6		6	15.77	— .23	— 1.4
Gold Seal	1-lb.	6		6	15.33	— .67	— 4.2
Sunlight	1-lb.	6	1	5	15.58	— .42	— 2.6
Ideal	1-lb.	6		6	15.78	— .22	— 1.4
Eureka	1-lb.	6	5	1	16.45	+ .45	+ 2.8
Popular	1-lb.	4		4	15.5	— .50	— 3.1
Belle Vernon	1-lb.	3		3	15.4	— .60	— 3.7
Power's Fancy Special	1-lb.	2	1	1	15.91	— .09	— .6
Finest	1-lb.	2		2	15.88	— .12	— .7
Columbia	1-lb.	1		1	15.63	— .37	— 2.3
Blue Grass	1-lb.	4		4	15.19	— .81	— 5.1
Montgomery & Tone	1-lb.	6		6	14.83	— 1.17	— 7.3
Lenmore	1-lb.	7	3	4	15.83	— .17	— 1.1
Crown Grocery	1-lb.	6	1	5	15.72	— .28	— 1.7
Favorite	1-lb.	2	1	1	15.94	— .06	— .4
Parker's Gilt Edge	1-lb.	1		1	15.82	— .18	— 1.1
Totals		309	57	231			
Per cent of prints short							81
Average weight of prints						15.66	
Average shortage of prints						.34	2.12
Finest	2-lb.	5		5	31.08	— .92	— 2.9
Central Cream	2-lb.	5	2	3	31.25	— .75	— 2.3
Geo. H. Smith	2-lb.	5		5	31.47	— .53	— 1.7
Ralph's Best	2-lb.	6	4	2	31.89	— .11	— .3
Power's Fancy Special	2-lb.	6	2	4	31.76	— .24	— .8
Oak Glen	2-lb.	5		5	31.17	— .83	— 2.6
Jevne's	2-lb.	3		3	31.97	— .03	— .1
Ralph's Best	2-lb.	2		2	31.38	— .62	— .9
Totals		40	11	29			
Per cent of prints short							72.5
Average weight of prints						31.54	
Average shortage of prints						.46	1.44

Average shortage of prints, 1.98 per cent. Average per cent of all prints short, 80.5.

The above table shows the results of weighings made on 349 individual prints of the 1-pound and 2-pound sizes, aggregating 389 pounds of butter of nearly 40 different brands. The 1-pound prints predominate in the tables, since a greater proportion of the butter is sold in this size. Eighty per cent of the 1-pound prints and 72 per cent of the 2-pound prints are short in net weight. Analysis shows that the different brands vary in average weight from + 2.8 per cent, the heaviest brand, to — 5.1 per cent and — 7.3 per cent, the lightest brands. The latter bears the name of a local grocer and is on sale in only one store in the city. The general average weight of all the 1-pound prints found is 15.66 ounces, the general average shortage thus being only .34 ounces or 2.12 per cent. In like manner the 2-pound brands average from correct weight, the heaviest found, to — 2.9 per cent, the lightest. The average weight of this size is 31.54 ounces, a shortage of only .46 ounces on two pounds, or 1.44 per cent. The general average shortage of all butter sold, the 2-pound prints being subordinated in proportion to the fewer prints sold, is only — 1.98 per cent. The sealer reports that the local courts have made the prosecution of offenders among the manufacturers and wholesalers more difficult here by the decision that the integrity of the shipment to the retailer must be proven before conviction can be obtained. Thus when thirty 1-pound prints are billed to the retailer, twenty-nine prints averaging 15 ounces are not sufficient to prove that the shipment was short; since the "1-pound prints" are decided to be a matter of description, and not a guarantee of individual weight. Thus, if the retailer dispose of only one print of an entire shipment the manufacturer can not be proceeded against, regardless of the shortages of the remainder of the shipment.

It is reported by nearly every one that before the intervention of the local sealer conditions were very chaotic and losses were very great on this commodity. In order to understand how much has been accomplished here comparison with the combined cities of Oakland and San Francisco will again be resorted to. The following figures are presented:

City.	Total number prints weighed.	Per cent of total short.	Per capita consumption, per year.	Per capita loss, per year.	Average weight of "lb" sold in ounces	Average shortage on all butter.
San Francisco and Oakland	484	89.9%	28 lbs.	1.37 lbs.	15.22	4.88%
Los Angeles	349	80.5%	28 lbs.	.55 lbs.	15.68	1.98%

The above table shows: First, that 12 per cent more prints are full weight here than in the combined cities; second, that the average "pound" is 3 per cent lighter in the combined cities; and third, that the per capita loss is 146 per cent greater in the combined cities. If we assume that the population here is 300,000 and that nine tenths of the people buy butter in print form, and that the average price is 35 cents per pound, we find from accepted figures that the loss here amounts to about $50,000 per year. Were conditions similar to those existing in the combined cities (and there is no good reason to believe that conditions were not dissimilar in the past; statements of merchants further favoring this conclusion) this loss would amount to more than $125,000 per year. And thus it appears that the annual saving to the people of the city in this one commodity alone on account of the inspection service is some $75,000. Conversely, the people of the combined cities are yearly losing, on account of neglect to establish such an inspection service.

some $140,000 yearly. This figure assumes that no better conditions would follow than have already resulted here, although we believe that these figures are susceptible of improvement and will show improvement in the future. That the saving is actual and not theoretical is further proven by the fact that the price of butter here and in San Francisco and Oakland seems to be identical; notwithstanding the difference in weights delivered.

Another large good effected is the putting of all companies on a fair basis of competition, since miscellaneous sizes have largely been eliminated; and thus the consumer is able to judge quality and price directly. An exception is found in the case of one brand only, this being found on sale in 13 and 26 ounces prints. The weight was considerably greater in this case and consequently this brand has not been tabulated.

Shortly after the office of sealer was established here, tests were made on the milk bottles in use. A large number of short bottles were discovered at that time (it is reported that those used by one firm were short about 20 per cent) and these were put out of use. The question of testing this class of apparatus was taken into the courts and it was then held by the local court that the milk bottle was not a measure, but a container, and did not come under the jurisdiction of the sealer on this account. Since this decision, which, we believe, is not an equitable one, but a few tests have been made here. The tests made at the time of this report show that the majority of the excessively short bottles have been withdrawn from use. The great majority of the bottles are slightly short, however, especially the smaller sizes in which cream is usually sold.

Taking as a standard the allowances made in the laws of New York State, which are plus or minus 2 drams on one half pint, plus or minus 3 drams on one pint and plus or minus 4 drams on one quart, we find that all the quarts tested are correct; 87 per cent of the pints are correct, while the remainder are short from — 3.5 per cent to — 4.3 per cent (allowance 2.3 per cent); while but 57 per cent of the half pints are correct. Eighty-three per cent of the faulty bottles are short, ranging from — 3.4 per cent to — 5.2 per cent (allowance 3.1 per cent).

The above data, we believe, indicates that the city of Los Angeles is in quite a satisfactory condition, and when it is considered that the sealer here has been working without any coöperation from other sections the results obtained must be considered excellent. How large the saving is which is being effected in various branches of business is indicated by this report and the additional saving on bulk commodities such as wood and coal, the sale of which could not be efficiently checked by your inspector, must also be enormous. This may be indicated by the report of the sealer that fourteen out of thirty-seven large wagon scales had to be completely rebuilt after the first test made here, before accuracy could be obtained.

The above data is the most excellent argument in favor of weights and measures inspection which can be secured. And the passage of the legislation already introduced making this possible throughout the state, and of the constitutional amendment which will render possible a compulsory inspection supervised by state authority is urged on this account. The constitutional amendment will also make possible State laws upon the sale of package goods, print butter, etc., which we believe

will do much to reduce the high cost of living existing at the present time.

PRINT BUTTER TABLE.

Brand.	Size.	Number.			Average weight. ounces.	Errors—Average.	
		Total.	Full weight.	Light weight.		Ounces.	Per cent.
American	½-lb.	6	2	4	3.88	— .12	— 3.0
Miscellaneous	½-lb.	7		7	3.08	— .92	—23.
Rexford	½-lb.	3		3	3.63	— .37	— 9.2
Totals		16	2	14			
Per cent of prints short							88
Average weight of prints						3.48	
Average shortage of prints						— .52	—13.
O. C. D. Brand	½-lb.	8		8	7.38	— .62	— 7.8
Rexford	½-lb.	2		2	7.22	— .78	— 9.7
Miscellaneous	½-lb.	6		6	6.65	— 1.35	—17.0
Totals		16		16			
Per cent of prints short							100
Average weight of prints						7.09	
Average shortage of prints						.91	11.4
American	1-lb.	12	1	11	15.43	— .57	— 3.6
Jersey	1-lb.	6		6	13.6	— 2.4	—15.
Rexford	1-lb.	6		6	14.54	— 1.46	— 9.1
O. C. D. Brand	1-lb.	18	1	17	15.61	— .39	— 2.4
California Cream	1-lb.	5		5	14.14	— 1.86	—11.6
Oakland Market Creamery	1-lb.	8		8	14.33	— 1.67	—10.4
Monarch	1-lb.	5	2	3	15.77	— .23	— 1.4
Pacific	1-lb.	1		1	15.5	— .5	— 3.1
Totals		61	4	57			
Per cent of prints short							93
Average weight of prints						14.99	
Average shortage of prints*						— 1.0	— 6.31
Challenge	1½-lb.	5		5	26.82	— 1.18	— 4.2
Brookside	1½-lb.	4	1	3	27.74	— .26	— .9
Golden Garland	1½-lb.	4		4	26.38	— 1.62	— 5.1
Totals		13	1	12			
Per cent of prints short							92
Average weight of prints						27.93	
Average shortage of prints						— 1.03	— 3.7
Oakland Market Cream	2-lb.	8		8	29.52	— 2.48	— 7.8
O. C. D. Brand	2-lb.	7		7	30.94	— 1.06	— 3.3
California Cr.	2-lb.	5		5	29.32	— 2.68	— 8.4
Humboldt	2-lb.	7		7	30.16	— 1.84	— 5.8
Jersey Brand "A"	2-lb.	6		6	30.89	— 1.11	— 3.5
Fort Sutter	2-lb.	5		5	30.39	— 1.61	— 5.0
Superior	2-lb.	5		5	30.92	— 1.08	— 3.4
Eucina	2-lb.	4		4	29.53	— 2.47	— 7.7
Fernwood	2-lb.	4		4	30.70	— 1.30	— 4.1
Red Clover	2-lb.	4		4	30.5	— 1.50	— 4.7
Rexford	2-lb.	2		2	30.26	— 1.74	— 5.4
American	2-lb.	3		3	30.3	— 1.70	— 5.4
Miscellaneous	2-lb.	6		6	29.61	— 2.39	— 7.5
Los Banos	2-lb.	4	1	3	31.74	— .26	— .8
Valley	2-lb.	3		3	31.11	— .89	— 2.8
Pacific	2-lb.	2		2	29.67	— 2.33	— 7.3
Monarch	2-lb.	1		1	30.84	— 1.16	— 3.7
Totals		76	1	75			
Per cent of prints short							—98.7
Average weight of prints						30.32	
Average shortage of prints						— 1.68	— 5.2

Averaging in 7 prints Isleton at — 7.1%, general average is — 5.41%.
General average per cent shortage of all print butter, — 5.87.
*Average shortage, including 15 prints "Isleton Brand," very commonly sold here, — 6.64%

It will be seen from the above tables that the butter conditions here are very chaotic and result in even more loss to the consumer than in San Francisco. The brands sold here have seldom been found in the latter city, only one or two of the brands weighed there being found on sale here. In order to obtain a fair general average a few prints of these brands have been included in the summaries. A new size print was discovered here which has resulted, we believe, from continual cut

ting of the weight of an original two-pound print. This is the pound and three quarters print which is occasionally found. This is billed as 1¾ pounds by the wholesaler, but is sold by the retailer as a "print" without statement of weight. The consumer undoubtedly often considers that two pounds of butter are being furnished, and thus manufacturers of this size have an unfair advantage since the butter is apparently cheaper in price. As it does not cause a large loss to the consumer, however, on account of the reduction in price referred to, the shortages have been tabulated with 1¾ pounds taken as the basis in this case. It is found that this size is already being furnished short in weight. Thus, the three brands of this size on which figures have been obtained show average shortages of .9 per cent, which is nearly full weight, 4.2 per cent and 5.1 per cent short, respectively. The same discrepancies between brands and the impossibility of honest competition exist here as have been described in San Francisco. The loss to the average consumer is even larger, as heretofore pointed out. Thus, the average shortages on all sizes and brands found here is 5.87 per cent. Taking as a basis that the population is 150,000; that 90 per cent of the butter is sold in this form; and that an average price is 35 cents per pound, it is estimated that the people of Oakland are losing more than $75,000 a year on this one commodity alone.

In view of the above condition of the apparatus in use, the weight of the packages found done up by the various merchants ready for delivery becomes a matter of great interest. As usual, the use of very few of the scales having large errors can be checked in this way, since on these scales the packages are usually done up as ordered and only for immediate delivery.

All the packages weighed have been tabulated in the usual manner. The table follows:

Commodity.	Weight.		Number.			Heaviest.		Lightest.		Average.		Errors—Average.	
	Pounds.	Ounces.	Total weight.	Full weight.	Light weight.	Pounds.	Ounces.	Pounds.	Ounces.	Pounds.	Ounces.	Ounces.	Per cent.
Raisins	3	------	4	----	4	2	15.44	2	13.62	2	14.44	— 1.56	— 3.3
Currants	2	------	5	----	5	1	14.75	1	12.38	1	13.8	— 2.2	— 6.9
Rice	5	------	2	2	----	5	.44	5	-------	5	.22	+ .22	+ .3
Small beans	2	------	3	----	3	1	15.12	1	14.5	1	14.85	— 1.15	— 3.6
Pink beans	1	------	4	----	4	----	15.18	----	14.12	----	14.5	— 1.5	— 9.4
Rice	2	------	3	1	2	2	-------	1	15.81	1	15.9	— .1	— .3
Raisins	2	------	3	2	1	2	.12	1	15.94	2	.02		
Lima beans	1	8	2	----	2	1	7.81	1	7.25	1	7.28	— .72	— 3.3
Lima beans	4	------	2	----	2	3	15.25	3	14.75	3	15.00	— 1.0	— 1.6
Brown sugar	1	8	2	----	2	----	-------	----	-------	1	6.69	— 1.31	— 4.1
Brown sugar	3	8	2	----	2	3	6.94	3	6.38	3	6.66	— 1.34	— 2.4
Cut sugar	1	------	4	----	4	----	15.06	----	15.	----	15.03	— .97	— 6.1
Cut sugar	3	------	4	----	4	2	15.25	2	14.88	2	15.12	— .88	— 1.8
Sago	1	------	2	2	----	----	16.12	----	16.06	----	16.09	+ .09	+ .6
Sugar	3	8	2	2	----	3	8.5	3	8.	3	8.25	+ .25	+ .4
Sago	5	------	1	----	1	----	-------	----	-------	5	14.38	— 1.62	— 2.0
Sago	2	------	2	----	2	----	-------	----	-------	1	14.78	— 1.22	— 3.8
Sago	1	------	4	----	4	----	15.25	----	14.94	----	15.12	— .88	— 5.5
Totals			51	9	42								

Average shortage of packages, — 3.6 per cent. Per cent of packages short, — 82 per cent. Scales weighing above, 3 each, — 3 per cent short; 1 O. K. (so listed in table).

Store No. 17: Scale used listed — 3 per cent.

Rice	1	------	8	----	8	----	14.18	----	13.25	----	13.8	— 2.2	—13.6

Store No. 2: Per cent of packages short, — 78 per cent. Average shortage of packages, — 2.0 per cent.

Commodity.	Weight.		Number.			Heaviest.		Lightest.		Average.		Errors—Average.	
	Pounds.	Ounces.	Total weight.	Full weight.	Light weight.	Pounds.	Pounds.	Pounds.	Ounces.	Pounds.	Ounces.	Ounces.	Per cent.
Sugar	3	8	3	1	2	3	8.18	3	5.69	3	6.52	— 1.48	— 2.6
Sugar	7	8	6	1	5	7	9.	7	2.5	7	6.02	— 1.98	— 1.7
Totals			9	2	7								

Store No. 16: Scales listed—1 O.K.; 1 — 9 per cent short; 1 — 3 per cent short. Per cent of packages short, — 75 per cent. Average shortage of packages, — 8.8 per cent.

Tea	8		1	1							7.62	— .38	— 4.8
Crackers (26.67 oz.)			1	1	1						26.68		O. K.
Pepper		2	1		1						1.44	— .56	—28.
Coffee	1		1		1						15.62	— .38	— 2.4
			4	1	3								

Card No. 19: Condition of scales—2 O. K. and 1 — 3 per cent. Per cent of packages short, — 60 per cent. Average condition of packages, — 25 per cent.

Sugar	1	2	3	1	2	1	2.25	1	1.75	1	2.		O. K.
Sugar	3	8	2	1	1	3	8.	3	7.5	3	7.75	— .25	.5

Card No. 8: Condition of scale, O.K. Grand totals—Per cent of all packages short, — 82 per cent. Average shortage of all packages, — 4.5 per cent.

It will be seen at once from the above table that short weight is here the general custom rather than the rule. For out of a total of seventy-seven packages of all commodities and sizes weighed in a number of different stores, only 14, or 19 per cent, were full in weight, the remaining 81 per cent being short. And the general average shortage of every package (both full and light weight being included) is 4.5 per cent. One of the largest stores in the city, which is doing an enormous business, shows an average shortage of 3.6 per cent on all packages; the scales showing a maximum error of only 3 per cent. And in other stores the average shortages range from a practically correct average,—25 per cent to the greatest average shortage of 13.8 per cent. And in nearly every case the errors are greater than the errors of the scales in use. This not only shows that an enormous loss is being borne by the consumer, but that this loss can not be wholly estimated by the condition of the scales in use, but that additional intentional short weight must also be considered.

We believe that the above conditions point most strongly to the imperative necessity of inspection of apparatus and of the manner of sale and amount of commodities delivered the consumer. And until this is done the extent of the short weight will undoubtedly go on unchecked. The passage of the constitutional amendment and of legislation already introduced in the State Legislature is again most strongly urged as the most efficient way in which the authorities can remedy the present deplorable condition.